CLAIMS

What is claimed is:

5   1.   A method for processing a network manager command in a

communication network, the method comprises the steps of:

generating, by a network manager, the network manager

command regarding a link between a first port and a second

10   port of the network;

providing, by the network manager, the network manager

command to an affiliated network element;

15   upon receiving the command, determining, by the affiliated

network element, type of network manager command;

when the network manager command is establish the link:

20   determining, by the affiliated network element, a network

path between the first port and the second port via at

least one other network element to produce a determined

network path;

generating, by the affiliated network element, a network

element command to establish the link between the first and

second ports based on the determined network path;

5 providing, by the affiliated network element, the network

element command to a first network element of the at least

one other network element;

determining, by the first network element, link element

10 type of the first network element in the link based on the

network element command; and

when the link element type of the first network element is

a termination link element, allocating, by the first

15 network element, resources of the first network element to

support the link between the first and second ports.

2.   The method of claim 1, wherein the generating a

network manager command further comprises:

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generating the network manager command to include link

criteria when the request includes link criteria, wherein

the link criteria includes at least one of: quality of

service, transmission latencies, privacy, and link failure
protection.

3.   The method of claim 1 further comprises:

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allocating, by the affiliated network element, resources of
the affiliated network element to the link between the
first and second ports, wherein the affiliated network
element supports the first port.

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4.   The method of claim 3 further comprises:

when the link element type of the first network element is
a supporting link element, assigning, by the first network
15   element, resources of the first network element to the link
between the first and second ports;

determining, by the first network element, a network path
from the first network element to the second port via at
20   least another network element to produce a second
determined network path;

generating, by the first network element, a second network
element command to establish the link between first network

element and the second port based on the second determined network path;

providing, by the first network element, the second network element command to the at least another network element;

determining, by the at least another network element, link element type of the at least another network element in the link based on the second network element command;

when the link element type of the at least another network element is a termination link element, allocating, by the at least another network element, resources to the link between the first and second ports.

5. The method of claim 4, wherein the assigning resources further comprises:

reserving the resources upon receiving the network element command when the resources are available; and

allocating the resources when an acknowledgement of establishment of the link is received.

6.　　The method of claim 4, wherein the assigning resources

further comprises:

allocating the resources upon receiving the network element

5　command.

7.　　The method of claim 1 further comprises:

providing, by the affiliated network element,

10　acknowledgement of establishment of the link to the network

manager.

8.　　The method of claim 1, wherein the generating the

network command further comprises at least one of:

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generating, by the network manager, a request for modifying

the link between the first port and the second port;　and

generating, by the network manager, a request for deleting

20　the link between the first port and the second port.

9.   A method for processing a network manager command in a communication network, the method comprises the steps of:

providing, by a network manager, a network manager command

5   regarding a link between a first port and a second port of the network to one of a plurality of network elements;

upon receiving the command, determining, by the one of the plurality of network elements, type of network manager

10   command;

when the network manager command is establish the link:

processing, by the plurality of network elements, the

15   network manager command, wherein the plurality of network elements is associated with the link between the first port and the second port;

providing, by the one of the plurality of network elements,

20   acknowledgement of processing the network manager command to the network manager;   and

receiving, by the network manager, the acknowledgement.

10. The method of claim 9 further comprises:

determining, by the network manager, link criteria to include at least one of: quality of service, transmission

5   latencies, privacy, and link failure protection; and

generating, by the network manager, the network manager command to include the link criteria.

10   11. The method of claim 9 further comprises:

enabling, by the network manager, usage of the link upon receipt of the acknowledgement.

15   12. The method of claim 9, wherein the generating the network command further comprises at least one of:

generating, by the network manager, a request for modifying the link between the first port and the second port; and

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generating, by the network manager, a request for deleting the link between the first port and the second port.

13. A method for processing a network manager command in a
communication network, the method comprises the steps of:

generating, by a network manager, a network manager command

5   regarding a link between a first port and a second port of

the network;

providing, by the network manager, the network manager
command to an affiliated network element;

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upon receiving the command, determining, by the affiliated

network element, whether the affiliated network element

supports the first or the second port;

15   when the affiliated network element does not support the

first or second port, identifying, by the affiliated

network element, a network element that supports the first

or the second port to produce an identified network

element;

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relaying, by the affiliated network element, the network

manger command to the identified network element;

upon receiving the command, determining, by the identified

network element, type of network manager command;

when the network manager command is establish the link:

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determining, by the identified network element, a network

path between the first port and the second port via a

plurality of network elements based on the network manager

command; and

10

processing, by the plurality of network elements, the

network manager command to establish the link between the

first and second ports.

15   14. The method of claim 13 further comprises:

providing, by the identified network element, an

acknowledgement of establishment of the link to the

affiliated network element; and

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relaying, by the affiliated network element, the

acknowledgement to the network manager.

15. The method of claim 13 further comprises:

determining, by the network manager, link criteria to
include at least one of: quality of service, transmission
latencies, privacy, and link failure protection; and

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generating, by the network manager, the network manager
command to include the link criteria.

16. The method of claim 13, wherein the identifying the

10 identified network element further comprises:

accessing a look-up table to identify the identified
network element based on identity of the first or second
port.

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17. The method of claim 13, wherein the generating the
network manager command further comprises:

including in the network manager command identity of the

20 identified network element supporting the first or second
port.

18. The method of claim 17, wherein the identifying the
identified network element further comprises:

interpreting the network manager command to identify the

identified network element supporting the first or the

second port.

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19. A method for a network manager to establish a link in a network, the method comprises the steps of:

providing a network manager command regarding a link
5   between a first port and a second port of the network to an affiliated network element; and

receiving an acknowledgement of processing completion of the network manager command from the affiliated network.
10

20. The method of claim 19, wherein the generating a network manager command further comprises:

generating the network manager command to include link
15   criteria when the request includes link criteria, wherein the link criteria includes at least one of: quality of service, transmission latencies, privacy, and link failure protection.

20   21. The method of claim 19, wherein the generating the network command further comprises at least one of:

generating, by the network manager, a request for modifying the link between the first port and the second port; and

generating, by the network manager, a request for deleting
the link between the first port and the second port.

5   22.   The method of claim 19, wherein the generating a
network manager command further comprises:

including in the network manager command identity of a
network element supporting the first or second port.

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23. An apparatus for establishing a link in a network, the apparatus comprises:

processing module; and

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memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to:

10   generate, as a network manager, a network manager command regarding a link between a first port and a second port of the network;

provide, as the network manager, the network manager

15   command to an affiliated network element;

upon receiving the command, determine, as the affiliated network element, type of network manager command;

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when the type of network manager command is establish the link:

determine, as the affiliated network element, a
network path between the first port and the second
port via at least one other network element to produce
a determined network path;

generate, as the affiliated network element, a network
element command to establish the link between the
first and second ports based on the determined network
path;

provide, as the affiliated network element, the
network element command to a first network element of
the at least one other network element;

determine, as the first network element, link element
type of the first network element in the link based on
the network element command;   and

when the link element type of the first network
element is a termination link element, allocate, as
the first network element, resources of the first
network element to support the link between the first
and second ports.

24. The apparatus of claim 23, wherein the memory further comprises operational instructions that cause the processing module to generate the network manager command by:

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generating the network manager command to include link criteria when the request includes link criteria, wherein the link criteria includes at least one of: quality of service, transmission latencies, privacy, and link failure

10 protection.

25. The apparatus of claim 23, wherein the memory further comprises operational instructions that cause the processing module to:

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allocate, as the affiliated network element, resources of the affiliated network element to the link between the first and second ports, wherein the affiliated network element supports the first port.

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26. The apparatus of claim 25, wherein the memory further comprises operational instructions that cause the processing module to:

when the link element type of the first network element is

a supporting link element, assign, as the first network

element, resources of the first network element to the link

between the first and second ports;

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determine, as the first network element, a network path

from the first network element to the second port via at

least another network element to produce a second

determined network path;

10

generate, as the first network element, a second network

element command to establish the link between first network

element and the second port based on the second determined

network path;

15

provide, as the first network element, the second network

element command to the at least another network element;

determine, as the at least another network element, link

20   element type of the at least another network element in the

link based on the second network element command;

when the link element type of the at least another network

element is a termination link element, allocate, as the at

provide, as the affiliated network element, acknowledgement of establishment of the link to the network manager.

30.   The apparatus of claim 23, wherein the memory further comprises operational instructions that cause the processing module to generate the network command by at least one of:

generate, as the network manager, a request for modifying the link between the first port and the second port;   and

generating, as the network manager, a request for deleting the link between the first port and the second port.

least another network element, resources to the link

between the first and second ports.

27. The apparatus of claim 26, wherein the memory further

5 comprises operational instructions that cause the

processing module to assign resources by:

reserving the resources upon receiving the network element

command when the resources are available; and

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allocating the resources when an acknowledgement of

establishment of the link is received.

28. The apparatus of claim 26, wherein the memory further

15 comprises operational instructions that cause the

processing module to assign resources by:

allocating the resources upon receiving the network element

command.

20

29. The apparatus of claim 23, wherein the memory further

comprises operational instructions that cause the

processing module to:

31. An apparatus for establishing a link in a network, the apparatus comprises:

processing module; and

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memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to:

10   provide, as a network manager, a network manager command regarding a link between a first port and a second port of the network to one of a plurality of network elements;

15   determine, as the one of the plurality of network elements, type of network manager command;

when the type of network manager command is to establish the link:

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process, as the plurality of network elements, the network manager command, wherein the plurality of network elements is associated with the link between the first port and the second port;

provide, as the one of the plurality of network
elements, acknowledgement of processing the network
manager command to the network manager;   and

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receive, as the network manager, the acknowledgement.

32.   The apparatus of claim 31, wherein the memory further
comprises operational instructions that cause the

10   processing module to:

determine,   as the network manager, link criteria to
include at least one of: quality of service, transmission
latencies, privacy, and link failure protection;   and

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generate, as the network manager, the network manager
command to include the link criteria.

33.   The apparatus of claim 31, wherein the memory further

20   comprises operational instructions that cause the
processing module to:

enable, as the network manager, usage of the link upon
receipt of the acknowledgement.

34.   The apparatus of claim 31, wherein the memory further

comprises operational instructions that cause the

processing module to provide the network manager command by

5   at least one of:

generate, as the network manager, a request for modifying

the link between the first port and the second port;   and

10   generate, as the network manager, a request for deleting

the link between the first port and the second port.

35. An apparatus for establishing a link in a network, the apparatus comprises:

processing module; and

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memory operably coupled to the processing module, wherein the memory includes operational instructions that cause the processing module to:

10 generate, as a network manager, a network manager command regarding a link between a first port and a second port of the network;

provide, as the network manager, the network manager

15 command to an affiliated network element;

upon receiving the command, determine, as the affiliated network element, whether the affiliated network element supports the first or the second port;

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when the affiliated network element does not support the first or second port, identify, as the affiliated network element, a network element that supports the

first or the second port to produce an identified

network element;

relay, as the affiliated network element, the network

manger command to the identified network element;

upon receiving the network manager command, determine,

as the identified network element, type of the network

manager command;

when the type of network manager command is establish

the link:

determine, as the identified network element, a

network path between the first port and the second

port via a plurality of network elements based on the

network manager command; and

process, as the plurality of network elements, the

network manager command to establish the link between

the first and second ports.

36. The apparatus of claim 35, wherein the memory further comprises operational instructions that cause the processing module to:

5 provide, as the identified network element, an acknowledgement of establishment of the link to the affiliated network element; and

relay, as the affiliated network element, the

10 acknowledgement to the network manager.

37. The apparatus of claim 35, wherein the memory further comprises operational instructions that cause the processing module to:

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determine, as the network manager, link criteria to include at least one of: quality of service, transmission latencies, privacy, and link failure protection; and

20 generate, as the network manager, the network manager command to include the link criteria.

38. The apparatus of claim 35, wherein the memory further comprises operational instructions that cause the

processing module to identify the identified network element by:

accessing a look-up table to identify the identified

5   network element based on identity of the first or second

port.

39.   The apparatus of claim 35, wherein the memory further comprises operational instructions that cause the

10   processing module to generate the network manager command by:

including in the network manager command identity of the identified network element supporting the first or second

15   port.

40.   The apparatus of claim 39, wherein the memory further comprises operational instructions that cause the processing module to identify the identified network

20   element by:

interpreting the network manager command to identify the identified network element supporting the first or the second port.

41. A network manager that establishes a link in a
network, the network manager comprises:

processing module; and

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memory operably coupled to the processing module, wherein
the memory includes operational instructions that cause the
processing module to:

10   provide a network manager command regarding a link

       between a first port and a second port of the network

       to an affiliated network element; and

       receive an acknowledgement of processing completion of

15   the network manager command from the affiliated

       network.

42. The network manager of claim 41, wherein the memory
further comprises operational instructions that cause the
20 processing module to generate a network manager command by:

generate the network manager command to include link
criteria when the request includes link criteria, wherein
the link criteria includes at least one of: quality of

service, transmission latencies, privacy, and link failure

protection.

43.   The network manager of claim 41, wherein the memory

5   further comprises operational instructions that cause the

processing module to generate a network manager command by

at least one of:

generate, as the network manager, a request for modifying

10   the link between the first port and the second port;   and

generate, as the network manager, a request for deleting

the link between the first port and the second port.

15   44.   The network manager of claim 41, wherein the memory

further comprises operational instructions that cause the

processing module to generate a network manager command by:

including in the network manager command identity of a

20   network element supporting the first or second port.